501.43385X00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Yoji NAKATANI et al.

Serial No.: 10/766,022

Filed: January 29, 2004

For: STORAGE SYSTEM AND FILE-REFERENCE METHOD OF REMOTE-SITE STORAGE SYSTEM

PETITION TO MAKE SPECIAL
UNDER 37 CFR 1.102(d) and MPEP. §708.02, VIII

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

January 24, 2005

Sir:

1. Petition

Applicants hereby petition to make this application **Special**, in accordance with 37 CFR §1.102(d) and MPEP 708.02, VIII. The present invention is a new application filed in the United States Patent and Trademark Office on January 29, 2004 and as such has not received any examination by the Examiner.

2. Claims

Applicants hereby represent that all the claims in the present application are directed to a single invention. If upon examination it is determined that all the claims presented are not directed to a single invention, Applicants will make an election without traverse as a prerequisite to the granting of special status.

3. Search

Applicants hereby submit that a pre-examination search has been made by a professional searcher, (a copy of which is attached), in the following classes and subclasses:

Class	Subclass
707	1, 200, 204
711	147, 154, 161, 162

4. Copy of References

A listing of all references found by the professional searcher is provided on a Form PTO-1449 and copies of the references and the Form PTO-1449 are submitted as part of an Information Disclosure Statement (IDS) filed on even date.

5. Detailed Discussion of the References and Distinctions Between the References and the Claims

Below is a discussion of the references uncovered by the search and cited in the IDS filed on even date that appear to be most closely related to the subject matter encompassed by the claims of the present application, and which discussion particularly points out how Applicants' claimed subject matter is distinguishable over those references. All other references uncovered by the search and cited in the IDS filed on even date are **not** treated in detail herein.

a. Detailed Discussion of the References

U.S. Patent No. 5,592,618 (Micka et al.), assigned to Intl. Business Machines Corp., is entitled Remote Copy of Secondary Data Copy Validation-Audit Function and discloses a primary host 1200 and a secondary host 1210. The primary data updates are continuously shadowed at a secondary site (secondary host 1210). The secondary site asynchronously shadows in real time. A primary data mover 404 collects sets of record updates and creates self describing record sets. The self describing record sets are transmitted to the secondary site, wherein the self describing record sets provide information adequate for the secondary site to shadow the record updates (without further communications from the primary site).

U.S. Patent Publication No. 2003/0158869 A1 (Micka), assigned to Intl. Business Machines Corp., is entitled Incremental Update Control for Remote Copy and discloses an application host 102 asynchronously transmitting one or more incremental database updates from a primary volume at a primary site 101 to a remote volume at a remote site 103. The remote volume (at the remote site) is synchronized with the primary volume for the current database update by transmitting a modified data to the remote volume as indicated by one or more bits in a second bitmap (see, figures 1, 5; and paragraphs 2, 5, 6, 13, 22, and 25-26).

U.S. Patent Publication No. 2003/0229764 A1 (Ohno et al.), assigned to Hitachi, Ltd., is entitled Data Storage Subsystem and discloses in a synchronous transfer mode is a channel adapter 22 of a second subsystem 11b updating each target

cache entry 31 in a cache memory as updated data 32 (see, figures 1-2, 4; and paragraphs 4, 18, 40, 53, and 55).

U.S. Patent Publication No. 2004/0172509 A1 (Takeda et al.), assigned to Hitachi, Ltd., is entitled Data Processing System Including Storage Systems and discloses a primary disk array device transferring a journal (updating history) to a secondary disk array device 200B according to instructions of the primary 100A and secondary 200B updates the data stored in the secondary disk array device 200B by using the journal according to instructions of the secondary host 100B. A secondary journal volume has a metadata area 7100 and a journal data area 7200. The metadata 7110B is copied from a metadata area of a primary journal volume 2222A and is stored in the metadata 7100 (of secondary journal volume). The update of PVOL 2212 can be reflected in SVOL 2214 (see, figures 1, 3-4, 7-17; and paragraphs 14, 38, 42, 84, and 86-88).

U.S. Patent Publication No. 2004/0193952 A1 (Narayanan et al.) is entitled Consistency Unit Replication in Application Defined Systems and discloses a consistency unit 105 for updating periodically a source replica 104 to a destination replica 106. The updates are synchronized to the destination replica 106. The metadata of a changed data of the source replica 104 is utilized to generate the consistency unit 105 of metadata of the changed data. The consistency unit 103 includes all of the related parent and child metadata tables of the changed records in a data collection of a first destination selected for synchronization (see, figures 1-2; and paragraphs 46-49, and 51-53).

b. Distinctions Between the References and the Claims

The present invention as recited in the claims filed are not taught or suggested by any of the above noted references whether taken individually or in combination with each other or in combination with any of the other references now of record.

The present invention as recited in the claims is directed to a storage system that includes: at least one disk to store data; a disk control unit to control writing and reading data to and from the at least one disk; a disk cache for transmitting and receiving data to and from the at least one disk; a file server including a CPU, a main memory to store programs and data for the CPU, and a network interface to be coupled to clients through a network; and interfaces for sending and receiving data to and from other storage systems through a communication link; wherein the main memory includes a file system-processing unit managing storage areas of the at least one disk so that files are correlated with data locations on the at least one disk and a file-system cache to be used by the file system-processing unit; and wherein the disk control unit receives data of a file updated in the another storage system and a history of file-management information through the communication link and stores the received data of a file and the history of file-management information on the disk; and wherein the disk control unit refers to the history of the file-management information on the disk and updates a file-management information in the file-system cache in accordance with the update of the file performed in the another storage system; and wherein when the disk control unit receives a read request from a client coupled to the storage system, the disk control unit refers to

the file-management information updated in the file-system cache and transfers the contents of updated file to the client according to the file-management information.

The above described features of the present invention, particularly where the disk control unit refers to the history of the file-management information on the disk and updates a file-management information in the file-system cache in accordance with the update of the file performed in the another storage system, and when the disk control unit receives a read request from a client coupled to the storage system, the disk control unit refers to the file-management information updated in the file-system cache and transfers the contents of updated file to the client according to the file-management information, are not taught or suggested by any of the references of record whether taken individually or in combination with each other.

6. Fee (37 C.F.R. 1.17(i))

The fee required by 37 C.F.R. § 1.17(i) is to be paid by:

[X] the Credit Card Payment Form (attached) for $130.00.

[ ] charging Account _____ the sum of $130.00.

A duplicate of this petition is attached.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Mattingly, Stanger & Malur, P.C., Deposit Account No. 50-1417 (501.43385X00).

Respectfully submitted,

MATTINGLY, STANGER & MALUR, P.C.

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FDB/sdb
Enclosures